AMENDMENTS TO THE CLAIMS

Please amend claims 1-2, 4, 7, 9-10, 12-13, 17-20, and 27-31 as follows:

1. (Currently Amended)   A system for ~~locating and managing~~ providing private network services using private addresses in a location remote from private network users, comprising:

> a host computer executing a plurality of private virtual servers, each private virtual server associated with a private network address space and providing private network services to ~~a plurality of private network users~~ the private network's users, the private network's users located remotely from the private virtual server, wherein a first private network address space associated with a first virtual server and a second private network address space associated with a second virtual server overlap; and
>
> a multiplexing/demultiplexing mechanism executed by the host computer, and communicatively coupled to a network to receive ~~signals~~ a signal from ~~any of the private networks users,~~ a private network user and to route ~~a~~ the received signal to the private virtual server associated with the private network user's network.

2. (Currently Amended)   The system of claim 1 wherein the multiplexing/demultiplexing mechanism switches signals between private virtual servers and tunnels associated with private ~~network users~~ networks.

3. (Original)   The system of claim 1, wherein the multiplexing/demultiplexing mechanism demultiplexes an incoming set of signals into segregated signals, and routes each segregated signal to the private virtual server associated with the private network that transmitted the segregated signal.

4. (Currently Amended)   The system of claim 1, wherein the multiplexing/demultiplexing mechanism receives an outgoing set of signals, and routes the

signals to ~~an outgoing tunnel~~ <u>outgoing tunnels</u> associated with the private virtual ~~server~~ <u>servers</u> that transmitted the signals.

5. (Original)   The system of claim 1, wherein the multiplexing/demultiplexing mechanism is located on the host computer.

6. (Original)   The system of claim 1, wherein the multiplexing/demultiplexing mechanism contains a lookup table, the lookup table storing associations between tunnel identifiers identifying tunnels for private networks and private virtual servers that service the private networks.

7. (Currently Amended)   A system for ~~locating and managing~~ <u>providing</u> private network services <u>using private addresses</u> in a location remote from private network users, comprising:

    ~~a plurality of host server computers;~~

    <u>a plurality of host server computers, a host server computer executing</u> a plurality of private virtual servers, ~~each private virtual server adapted to execute on one of the plurality of host server computers~~ <u>wherein each private virtual server is associated with a private network~~-user;~~</u> <u>and wherein a first private network associated with a first private virtual server and a second private network associated with a second private virtual server have overlapping address spaces;</u>

    a switching mechanism communicatively connected <u>to private network users over a network and</u> to the plurality of host server computers to receive signals from the private network users and route each signal to the host server computer executing the private virtual server associated with the private network user<u>'s</u> network; and

    a multiplexing/demultiplexing mechanism communicatively coupled to the switching mechanism for receiving signals from the switching mechanism and routing signals to the correct private virtual server executing on the host server.

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8. (Original) The system of claim 7, wherein the signals are addressed using a private address space.

9. (Currently Amended) The system of claim 7, further including:

at least one tunnel for transmitting a signal between a ~~customer's~~ private network and the switching mechanism.

10. (Currently Amended) A system for managing virtual servers using private addresses ~~wherein the private addresses overlap~~, and wherein the virtual servers are located in a location remote from private network users, comprising:

~~a plurality of host computers;~~

a plurality of host computers, a host computer executing a plurality of virtual servers residing on the ~~plurality of host computers~~ host computer, a virtual server associated with a private network, and wherein a first private network associated with a first virtual server and a second private network associated with a second virtual server have overlapping address spaces;

a tunnel switching mechanism communicatively coupled to the host computers, and communicatively coupled to ~~the~~ a network to receive signals from ~~any of the private networks users~~ a private network user, and to route ~~received signals~~ a received signal to ~~each~~ the host computer executing the virtual server associated with the private network user's network; and

a multiplexing/demultiplexing mechanism executed by each host computer, and communicatively coupled to a network to receive signals from ~~any of the private networks users~~ a private network user, and to route ~~received signals~~ a received signal to the virtual server executing on the host computer that is associated with the private network user's network.

11. (Original) The system of claim 10, wherein the private address spaces of a first and a second virtual server overlap.

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12. (Currently Amended)   The system of claim 10, further ~~including~~ comprising:

    a customer lookup table, the customer lookup table storing associations between

        physical interfaces and tunnel identifiers identifying tunnels for private

        networks and a plurality of customer forwarding tables; and

    a plurality of customer forwarding tables, each customer forwarding table associating

        network addresses with physical interfaces and tunnel identifiers.

13. (Currently Amended)   In a system comprising a host computer containing a
plurality of virtual servers that each support a private network address space wherein the private
~~addresses~~ network address spaces of two or more of the virtual servers overlap, a method for
~~locating and managing~~ providing private network services in a ~~data center~~ location remote from
private network users of the virtual servers, the method comprising:

    receiving a transmission addressed using a private network address of a recipient; and

    routing the transmission to a virtual server associated with a network of at least one of

        the sender or the recipient of the transmission.

14. (Original) The method of claim 13, further comprising receiving the transmission via
a tunnel from a private network.

15. (Original) The method of claim 13, further comprising routing the transmission
based upon a layer two tunnel identifier.

16. (Original) The method of claim 13, wherein routing the transmission to a virtual
server comprises:

    terminating an incoming tunnel containing a transmission; and

    multiplexing the transmission to a virtual server.

17. (Currently Amended)   The method of claim 16, ~~including~~ further comprising:

    reading a tunnel identifier contained in the transmission; and

    selecting a virtual server based upon the tunnel identifier.

18. (Currently Amended)   The method of claim 13, wherein routing the transmission to a virtual server comprises:

      terminating an incoming tunnel containing a transmission;

      switching the transmission to a tunnel connected to a physical host computer

            containing a ~~customer's~~ private network's virtual server;

      terminating the tunnel at the physical host computer; and

      multiplexing the transmission to the virtual server.

19. (Currently Amended)   In a system comprising a host computer containing a plurality of virtual servers which support a private network address space wherein ~~a first and a second virtual-server-private-address~~ the private network address spaces of two or more of the virtual servers overlap, a method for ~~performing~~ providing private network services using private addresses in a location remote from private network users, the method comprising:

      storing a customer lookup table, the customer lookup table storing associations

            between physical interfaces and tunnel identifiers identifying tunnels for

            private networks and a plurality of customer forwarding tables;

      storing a plurality of customer forwarding tables, the customer forwarding tables

            associating network addresses with physical interfaces and tunnel identifiers;

      receiving a transmission on a physical interface, the transmission containing a tunnel

            identifier;

      determining the correct customer forwarding table from the customer lookup table

            using the physical interface and the tunnel identifier;

      determining via the customer forwarding table a physical interface and tunnel

            identifier associated with a network address of the transmission; and

      sending the transmission to the network address on the determined physical interface

            using the determined tunnel identifier.

20. (Currently Amended)   In a system comprising a host computer containing a plurality of virtual servers which support a private network address space wherein ~~a first and a second virtual server private address~~ the private network address spaces of two or more of the virtual servers overlap, a method for a private network to use private network services, wherein

the private network services are located remotely from the private network, the method comprising:

> sending a privately addressed transmission on a tunnel to a virtual server; and

> receiving a privately addressed transmission back from the virtual server.

21. (Original) The method of claim 20, wherein the privately addressed transmission does not include a registered IP address.

22. (Original) The method of claim 20, wherein the tunnel encapsulates the privately-addressed transmissions in a layer two protocol.

23. (Original) The method of claim 20, further comprising:

> segregating a first transmission including an Internet address from a second

>> transmission including a virtual server address; and

> sending the second transmission on a tunnel.

24. (Original) A method for creating a software architecture suitable for implementing a virtual server system ~~using private addresses wherein the private addresses overlap~~ supporting private network address spaces, wherein the private network address spaces overlap, the method comprising:

> implementing a tunneling protocol to tunnel privately-addressed transmissions

>> between a plurality of virtual servers and a plurality of users; and

> implementing a separate routing context on behalf of each user to route privately-

>> addressed transmissions between the users and the virtual servers.

25. (Original) The method of claim 24, wherein the tunneling protocol is Asynchronous Transfer Mode virtual circuits.

26. (Original) The method of claim 24, wherein the tunneling protocol is frame relay virtual circuits.

27. (Currently Amended)   The method of claim 24, wherein the tunneling protocol is the Point-to-Point protocol across the Layer two Tunneling Protocol.

28. (Currently Amended)   The method of claim 24, wherein the tunneling protocol is the Internet Protocol security protocol.

29. (Currently Amended)   A computer program product for switching signals between private virtual servers supporting private network address spaces, wherein the private network address spaces overlap, and tunnels associated with private network users, the computer program product comprising:

      program code for demultiplexing an incoming set of signals into segregated signals; and

      program code for routing each segregated signal to the private virtual server associated with the private network user that transmitted the segregated signal.

30. (Currently Amended)   The computer program product of claim 29, further including:

      program code for receiving an outgoing signal; and

      program code for routing the outgoing signal to an outgoing tunnel associated with the private virtual server that transmitted the signal.

31. (Currently Amended)   A computer program product for managing virtual servers using private addresses wherein the private addresses overlap that support private network address spaces, wherein the private network address spaces overlap, and wherein the virtual servers are located in a location remote from private network users, the computer program product comprising:

      program code for creating using a plurality of virtual servers residing on a plurality of host computers;

      program code to receive signals from any of the private networks network users, and to route received signals to each host computer executing the virtual server associated with the private network user; and

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program code to route received signals to the virtual server executing on the host
computer that is associated with the private network user.

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32. (Original) The computer program product of claim 31, further including:
program code for storing associations between physical interfaces and tunnel
identifiers identifying tunnels for private networks, and a plurality of customer
forwarding tables; and
program code for creating a plurality of customer forwarding tables, each customer
forwarding table associating network addresses with physical interfaces and
tunnel identifiers.

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